2015 UDOT RESEARCH PROBLEM STATEMENT

****** Problem statement deadline is March 10, 2015. Submit statements to Jason Richins at jtrichins@utah.gov. ******

Title: Residual Salt Value **No. (office use):** 15.02.06

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UDOT Champion (suggested): Lloyd Neeley

Select a Subject Area

- ☐ Materials/Pavements
- ☒ Maintenance
- ☐ Traffic Mgmt/Safety
- ☐ Preconstruction
- ☐ Planning
- ☐ Structures/Geotechnical

1. Describe the problem to be addressed.

What is the value of residual salt is left on the roadway after a storm event and how fast does it get worn off?
During a snow storm, snow plow crews treat the roadways with solid salt products, chiefly solid sodium chloride (white salt). Depending on the severity of the storm, any particular segment of roadway may be treated several times. After the storm passes and salting operations are complete, a residue of dried salt is generally left on the roadway. The residue may stay essentially in place for several weeks in the absence of a cleansing rain or light snow event, although the quantity of residue diminishes over time. If a new snow event occurs during the period of time when residual salt is present on the roadway, the residual salt may provide some benefit to subsequent plowing operations. The benefit may be in the form of less need for anti-icing operations with liquid salt brine, or in the form of a lower spread rate during plowing operations. However, the value of the residual salt needs to be quantified so that operations in response to the new storm can be properly calibrated.

2. Explain why this research is important.

If the value of the salt is high enough, it could be used as a pre-storm treatment if another storm event is forecasted.

3. List the research objective(s):

1. Determine value of residual salt on roadway after storm event.
2. Determine rate at which residual salt gets worn off by vehicles.
3. Develop a method to measure or estimate the quantity of residual salt on the roadway, and use that initial quantity along with the rate at which it diminishes to establish recommended anti-icing application rates and/or deicing spread rates, based upon the number of days since previous deicing operations.

4. List the major tasks:

1. Determine how much salt is left on the road after a storm.
2. What is the value of the salt in lbs/lane-mile of the salt on the road?
3. What is the rate that the salt is worn off due to traffic?
4. Develop a procedure to determine to what extent lower quantities of liquid brine or solid deicer can be used for the next event, based on time since the last event.

5. List the expected results:

1. Final report
2.

6. Describe how this research will be implemented.

This will be used in UDOT's pretreatment program in winter maintenance.

7. Requested from UDOT: $40000 **Other/Matching Funds:** $ **Total Cost:** $40000

8. Outline the proposed schedule, including start and major event dates.

Start after contract signed June 2015
End and final report completed by June 2016